

AMENDMENTS

In the claims

Claim 1. (previously presented) An apparatus for the printing of functional toners on a flat glass plate, said apparatus comprising:

- an electrostatic printing plate including a polymer layer bonded to an electrically conducting substrate that is electrically grounded;

- a first corona unit means for electrically charging said electrostatic printing plate with ions from a corona discharge thereby sensitizing said electrostatic printing plate and defining charged and uncharged areas on said electrostatic printing plate;

- a liquid development unit which is electrically biased to deposit liquid functional toner having toner particles on said uncharged areas of said electrostatic printing plate;

- a transfer station in which said flat glass plate is moved into close proximity to said electrostatic printing plate, but not touching, forming a mechanical gap;

- a filling means for filling the mechanical gap between said electrostatic printing plate and said glass plate with a clear toner diluent; and,

- a second corona unit means located near said glass plate but away from said electrostatic printing plate and which is electrically connected to a high voltage power supply for creating a corona discharge which sprays free charges on said glass plate and which creates an electrical field that causes said toner particles to transfer across the diluent filled mechanical gap in an orderly manner.

Claim 2. (previously presented) The apparatus of claim 1 further comprising;

- mechanical adjustment capability means located on said second corona unit means including mechanical shutters for controlling the exact position where toner transfer from said electrostatic printing plate to said flat glass plate occurs;

- cleaning unit means for removing residual toner particles from said electrostatic printing plate;

a drying station where warm air is provided to dry said flat glass plate after imaging; and,
support means for supporting said flat glass plate on it's edges so that said free charges in said flat glass plate tightly bind toner particles to the surface of said flat glass plate after transfer.

Claim 3. (previously presented) The apparatus of claim 1 further comprising:

positive phototool means 14 for exposing said electrostatic printing plate to actinic radiation in order to cross-link elements of said printing plate which will not be imaged and leaving unexposed elements not cross-linked.

Claim 4. (previously presented) The apparatus of Claim 1 wherein said uncharged areas of said electrostatic printing plate develop said toner particles.

Claim 5. (previously presented) The apparatus of Claim 4 wherein the polarity of said corona ions is identical to that of the toner particles in the liquid toner.

Claim 6. (previously presented) The apparatus of Claim 1 wherein said liquid development unit includes an electrode which is electrically biased to a value approximately equal to the charged voltage of said electrostatic printing plate.

Claim 7. (previously presented) The apparatus of Claim 2 wherein said flat glass plate is dried of excess liquid at said drying station by air at substantially room temperature which is blown thereover to partially fix said toner.

Claim 8. (original) The apparatus of Claim 1 wherein said toner comprises at least three functional particle toners.

Claim 9. (cancelled)

Claim 10. (currently amended) An apparatus for the printing of functional toners on a flat glass plate, said apparatus comprising:

a flat electrostatic printing plate including a polymer layer bonded to an electrically conducting substrate that is electrically grounded;

a first corona unit means for electrically charging said flat electrostatic printing plate with ions from a corona discharge thereby sensitizing said flat electrostatic printing plate and defining charged and uncharged areas on said flat electrostatic printing plate;

a liquid development unit which is electrically biased to deposit liquid functional toner having toner particles on said uncharged areas of said flat electrostatic printing plate;

a reverse roller unit means for mechanically removing excess liquid from the developed plate;

a depress corona to compact the developed toner particles before transfer;

a transfer station in which said flat electrostatic printing plate is moved in close proximity to said flat glass plate forming a mechanical gap between said printing plate and said glass plate;

a filling means for filling the mechanical gap between said flat printing plate and said flat ~~receiving~~ glass plate with clear toner diluent; and,

a second corona unit means located near said glass plate but away from said electrostatic printing plate which is electrically connected to a high voltage power supply for creating a corona discharge which sprays free charges on said glass plate and which creates an electrical field that causes said toner particles to transfer across said diluent filled mechanical gap in an orderly manner.

Claim 11. (previously presented) The apparatus of Claim 10 further comprising;

electronic control mean for providing adjustable time delays between each step of the printing process to achieve optimum image quality; and,

support means that is more resistive than the glass plate for supporting said flat glass plate on its edges so that said free charges in said glass plate tightly bind

toner particles on the surface of said glass plate after transfer, without distortion due to edge charge leakage.

Claim 12. (previously presented) The apparatus of claim 10 wherein the clear toner diluent filling said mechanical gap has an electrical conductivity from 0.15 to 100 pico siemens per centimeter.

Claim 13. (previously presented) The apparatus of Claim 10 wherein said printing plate comprises a reimagable photoreceptor plate, comprising an amorphous selenium layer, which is sensitized by a corona discharge and imaged by an optical means for imaging said sensitized amorphous selenium layer.

Claim 14. (previously presented) The apparatus of Claim 10 wherein toner is transferred to said glass plate and the transferred toner image is dried with warm air to partially set a resin coating on said toner particles and wherein successive printed layers of toner build up a structure of a predetermined height.

Claim 15. (previously presented) The apparatus of Claim 10, wherein a palladium catalytic toner is imaged on a relieved, or ribbed, glass plate that can be subsequently plated with a metal to generate an electrode structure.

Claim 16. (previously presented) The apparatus of Claim 23 wherein said toner is a phosphor particle toner and said glass plate having electrode structures between said ribs.

Claim 17 - 22. (cancelled)

Claim 23. (previously presented) The apparatus of Claim 10 wherein said flat glass plate has a relieved structure comprising ribs.